CLAIMS

What is claimed is:

1. A color calibration system comprising:

    a visual display terminal (VDT) having a display screen and a plurality of color channels, each color channel having an intensity input, a bias input, and a gain input, the VDT to produce an image on the display screen responsive to the intensity input;

    a color calibration sensor optically coupled to the VDT providing values responsive to chromaticity and luminance of a test patch portion of the image on the display screen; and,

    a computer processing unit (CPU) electrically coupled to the VDT and the color calibration sensor to perform calibration of the VDT including setting the bias of each color channel to reduce the difference between a target black point and the test patch portion with the intensity input at a minimum value for each color channel.

2. The color calibration system of claim 1 wherein the color calibration sensor includes a top flange, a bottom flange, a cylindrical core section joining the top flange and the bottom flange, and a signal cable connected to the core section such that the signal cable may be wound onto the core section between the top flange and the bottom flange.

3. The color calibration system of claim 2 wherein the bottom flange is larger than the top flange.

4. The color calibration system of claim 2 wherein the bottom flange is formed from a material that is transparent or translucent.

5. The color calibration system of claim 1 wherein the color calibration sensor includes:

    a plurality of suction cups having a bottom surface that may be removably attached to the display screen; and,

a light seal that surrounds the plurality of suction cups and having a bottom surface that extends below the bottom surface of the suction cups.

6. The color calibration system of claim 1 wherein performing calibration further includes increasing the intensity input to a low intensity value for each color channel of the test patch portion and setting the bias of each color channel to reduce the difference between a chromaticity of the target black point and the test patch.

7. The color calibration system of claim 1 wherein performing calibration further includes setting the gain of each color channel to reduce the difference between a target white point and the test patch portion with the intensity input at a maximum value for each color channel.

8. The color calibration system of claim 7 wherein performing calibration further includes setting a digital to analog conversion lookup table (DAC LUT) such that the intensity input at the maximum value for each color channel produces a maximum output of the DAC LUT and the intensity input at the minimum intensity value for each color channel produces a minimum output of the DAC LUT.

9. The color calibration system of claim 1 wherein performing calibration further includes testing the values provided by the color calibration sensor to determine if the color calibration sensor is correctly coupled to the display screen.

10. The color calibration system of claim 9 wherein the values provided by the color calibration sensor are tested to determine a refresh frequency of the display screen.

11. A method for color calibrating a visual display terminal (VDT) having a plurality of color channels, the method comprising:

displaying an image on a display screen of the VDT, the image including a
test patch portion with an intensity input at a minimum intensity
value for each color channel;

reading values responsive to chromaticity and luminance of the test patch
portion of the image on the display screen with a color calibration
sensor optically coupled to the VDT; and

setting a bias of each color channel to reduce the difference between a
target black point and the test patch.

12.   The method of claim 11 further comprising increasing the intensity input to
a low intensity value for each color channel of the test patch portion and
setting the bias of each color channel to reduce the difference between a
chromaticity of the target black point and the test patch.

13.   The method of claim 11 further comprising setting a gain of each color
channel to reduce the difference between a target white point and the test
patch with the intensity input at a maximum value for each color channel.

14.   The method of claim 13 further comprising setting a digital to analog
conversion lookup table (DAC LUT) such that the intensity input at the
maximum value for each color channel produces a maximum output of the
DAC LUT and the intensity input at the predetermined low intensity value
for each color channel produces a low intensity output of the DAC LUT, a
ratio of the low intensity value to the maximum value being equal to a ratio
of the low intensity output to the maximum output.

15.   The method of claim 11 further comprising testing the values provided by
the color calibration sensor to determine if the color calibration sensor is
correctly coupled to the display screen.

16.   The method of claim 15 wherein the values provided by the color
calibration sensor are tested to determine a refresh frequency of the
display screen.

17.   A machine-readable medium comprising instructions which, when executed by a machine, cause the machine to perform operations including:

displaying an image on a display screen of the VDT, the image including a test patch portion with an intensity input at a minimum intensity value for each color channel;

reading values responsive to chromaticity and luminance of the test patch portion of the image on the display screen with a color calibration sensor optically coupled to the VDT; and

setting a bias of each color channel to reduce the difference between a target black point and the test patch.

18.   The machine-readable medium of claim 17 wherein the operations further include increasing the intensity input to a low intensity value for each color channel of the test patch portion and setting the bias of each color channel to reduce the difference between a chromaticity of the target black point and the test patch.

19.   The machine-readable medium of claim 17 wherein the operations further include setting a gain of each color channel to reduce the difference between a target white point and the test patch with the intensity input at a maximum value for each color channel.

20.   The machine-readable medium of claim 19 wherein the operations further include setting a digital to analog conversion lookup table (DAC LUT) such that the intensity input at the maximum value for each color channel produces a maximum output of the DAC LUT and the intensity input at the predetermined low intensity value for each color channel produces a low intensity output of the DAC LUT, a ratio of the low intensity value to the maximum value being equal to a ratio of the low intensity output to the maximum output.

21.   The machine-readable medium of claim 17 wherein the operations further include testing the values provided by the color calibration sensor to determine if the color calibration sensor is correctly coupled to the display screen.

22.   The machine-readable medium of claim 21 wherein the values provided by the color calibration sensor are tested to determine a refresh frequency of the display screen.